EXPLANATION OF THE PLATES.

Plate XIX.

Kerkophorus bicolor, sp. n. Townbush, Maritzburg. (No. 3245.)

Fig. 1. Generative organs, part of. × 4·5.
Fig. 1 *a*. Jaw. × 12·4.
Fig. 1 *b*. Spermatophore, × 12·4, not complete, having lost the spines. A few of these were yet to be seen on the terminal end of the flume, and are shown enlarged 30 times.
Fig. 1 *c*. Teeth of the radula at different parts of the row.

Microkerkus symmetricus, Craven. (No. 4.)

Fig. 2. Part of the generative organs. × 4·5.
Fig. 2 *a*. A portion of the spermatophore, showing the branched antler-like spines. × 30.
Fig. 2 *b*. The jaw. × 12.
Fig. 2 *c*. Anterior teeth of the radula, × 700, 59th to 56th.

Plate XX.

Kerkophorus burnupi, sp. n. Maritzburg. (No. 15.)

Fig. 1. The generative organs. × 8.
Fig. 1 *a*. Jaw. × 12·5.
Fig. 1 *b*. Teeth of radula at different parts of the row. × 368.

Kerkophorus ? natalensis, sp. n. Equeefa.

Fig. 2. Part of the genitalia. × 4·5.
Fig. 2 *a*. Spermatophore, portion of (× 12·5), with spine (× 30).
Fig. 2 *b*. Jaw.
Fig. 2 *c*. Teeth of radula at different parts of the row. × 368.

LIII.—*Description of a Harpacticid Copepod parasitic on an Octopus.* By G. P. Farran.

[Plate XXI.]

In 1906 a specimen of the deep-water octopus, *Polypus ergasticus*, was trawled by the Department of Agriculture's steam cruiser 'Helga' in 610–680 fathoms off the S.W. coast of Ireland (Station S.R. 331; see 'Fisheries, Ireland, Sci. Invest.' 1907, i. [1909]), and was handed to Miss A. L. Massy, who was working at the Department's collection of Cephalopoda. On examining it Miss Massy noticed that on the inside of the arm-membranes were what appeared to be numerous small white villi or spinules. On closer inspection

these proved to be minute copepods, attached by their mouth-appendages to the skin of the octopus, their tail-ends being free. All the specimens found were females, most of them with egg-sacs. They appear to belong to a new genus of the Harpacticoidea, most nearly allied to the genus *Idya*, but greatly modified for a parasitic life. It may, perhaps, be held that a new family should be made for the genus, but as all the appendages which have not undergone degeneration have retained, to a greater or less degree, their *Idya*-like form, I have placed it in the same family as *Idya*.

The genus and species may be described as follows:—

Family Idyidæ.

Genus Cholidya, nov.

An Idyoid, modified for a parasitic life, in which the swimming appendages are reduced or absent and the cephalon and thorax soft and swollen. Cephalic appendages with the same general structure as in the rest of the family. Inner ramus of the second antenna very small. Mandible with an unbranched palp. First maxilla forming a simple piercer. First foot reduced in size, but of the same form as in the genus *Idya*. Second foot two-branched, but with its joints and setæ reduced. Third and fourth feet absent. Fifth feet highly chitinized and ventral in position, connected by a chitinized ventral plate. Abdomen not chitinized and with feebly marked segmentation. Egg-sac one, attached.

Cholidya polypi, sp. n.

Female (fig. 1) length ·78–·8 mm. Cephalon slightly flattened. Thorax globular, swollen, filled with what appears to be undifferentiated food or yolk-material. Abdomen tapering from the swollen thorax to the small furca.

First antenna (fig. 2) six-jointed, the fourth joint bearing a short æsthetask; proportional length of joints, measured along the upper margin:—

1	2	3	4	5	6
10	23	12	8	7	7

Second antenna (fig. 3) with two basal joints; endopodite very small, with two terminal setæ; exopodite two-jointed, second joint about half as long as the first and bearing one lateral and four terminal setæ.

Mandible (fig. 4) with a strong three-toothed cutting-blade; palp very small, unbranched, with four setæ.

First maxilla (fig. 5) appears to consist of a flattened plate with a curved point: no setæ or lobes could be made out, but they may have escaped notice.

Second maxilla (fig. 6) two-jointed, cheliform, the claw finely denticulated on the inner edge.

Maxillipede (fig. 7) with basal joint and chela as in the second maxilla, but with a stronger and sharper claw and a more muscular basal joint.

First foot (fig. 8) very small and feebly chitinized. It is of the same structure as in the genus *Idya*, and the musculature of the exopodite is well developed. The length of the first foot in *Idya furcata* is about two-fifths of the total length of the animal; in the present species it is about one-eighth.

Second foot (fig. 9) very minute, with two-jointed exopodite and endopodite, the former with two outer-edge and two terminal setæ, the latter with one outer-edge and two terminal setæ. The muscles in the second basal joint which move the exopodite are fairly well developed.

Third and fourth feet absent.

Fifth feet (fig. 10) strongly chitinized, ending in six stout denticulations, of which the innermost bears a small seta, outer edge with one seta set back a little from the margin on the posterior face, inner edge with two setæ situated close together near the point of attachment of the foot, and distal to them a pore in the chitinous margin of the foot which seems to be the mouth of a gland. The fifth feet are articulated to either end of a broad, chitinous, transverse ventral plate. The two inner-edge setæ of the fifth foot of this species seem to correspond morphologically to the two or three setæ on the basal joint of the fifth foot of *Idya*, the two joints in *Cholidya* having become fused.

Genital openings (fig. 11) as in the genus *Idya*, except that the minute setæ lateral to the oviducal opening are absent. The spermatheca is situated a short distance behind the oviducal opening, and has a short sigmoid duct terminating at the indistinct furrow, which marks the fusion of the first and second abdominal segments.

Rami of furca (fig. 12) about one and a half times as long as broad, with one short stout terminal and two lateral setæ.

Egg-sac single, containing a small number of comparatively large eggs. It is flask-shaped and attached to the oviducal opening by its narrow neck.

Hab. Attached to the inner face of the arm-membrane of

Polypus ergasticus from the west coast of Ireland, 600–700 fathoms.

The occurrence of a parasitic Harpacticid in the unusual situation in which this species was found, though not so strange as is the case of *Balænophilus*, described by Aurivillius from the baleen plates of the blue whale, is not without interest, and the two species may well be compared. In both instances we have isolated species belonging to, or closely allied to, non-parasitic families, specially modified for an unusual manner of life. In *Cholidya* the modification has gone much further than in *Balænophilus*, and, had not the first pair of feet remained unmodified, the relationship to *Idya* might have been overlooked, as most of the other appendages, taken separately, are common to other groups, both parasitic and free-living. In *Balænophilus*, on the other hand, the adaptations to its peculiar mode of life are so slight that its relationship to *Harpacticus* is at once apparent, and it would be difficult to make sure that it had a parasitic habit were its place of origin unknown. The genus *Idya*, by the possession of strongly chelate maxillæ and maxillipedes, seems well adapted to give rise to a parasitic race, as the means of attachment are already present.

These instances of parasitic forms—as it were, in the making—throw some light on the origin of the various families of parasitic Copepoda in general, many of which, it is probable, have started independently as modifications of widely separated non-parasitic species.

EXPLANATION OF PLATE XXI.

Fig. 1.	*Cholidya polypi*, ♀.		Ventral view.
Fig. 2.	„	„	First antenna.
Fig. 3.	„	„	Second antenna.
Fig. 4.	„	„	Mandible.
Fig. 5.	„	„	First maxilla.
Fig. 6.	„	„	Second maxilla.
Fig. 7.	„	„	Maxillipede.
Fig. 8.	„	„	First foot.
Fig. 9.	„	„	Second foot.
Fig. 10.	„	„	Fifth foot.
Fig 11.	„	„	Genital openings.
Fig. 12.	„	„	Furca.